



Being Creative Briefly: The SCAB-6 as a Brief Measure of Cognitive-Productive Aspects of Creativity

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Abstract

The Scale of Creative Attributes and Behavior (SCAB) is a 20-item measure of five dimensions of creativity. This study developed and evaluated an abbreviated version using data from 515 adults. Principal axis factoring, item relationships, redundancy, and conceptual content were used to identify six items representing a general factor of the original scale. The resulting SCAB-6 demonstrated good internal consistency and correlated strongly with the 20-item SCAB. Although all six items were meaningfully loaded on a common factor, unrestricted factor analysis yielded two correlated factors corresponding to Creative Cognitive Style and Creative Engagement. The SCAB-6 may therefore be used as a brief overall measure of perceived Cognitive-Productive creative orientation or to examine its two facets when theoretically relevant. The SCAB-20 remains preferable when broader multidimensional characteristics of creative personality are of interest.

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1. Introduction

Creativity is generally understood as the capacity to generate ideas or products that are both novel and appropriate or useful (Runco & Jaeger, 2012). Creative products provide one means of identifying creativity, but creativity also reflects characteristics of individuals that make creative thought and activity more likely. Classic accounts have associated creativity with divergent thinking, cognitive flexibility, openness to experience, intrinsic motivation, imagination, and sustained involvement in creative activity (Gough, 1979; Simonton, 1999; Torrance, 1974). Accordingly, creativity has been assessed through multiple approaches, including divergent-thinking tasks, creative achievement or products, and self-reported creative characteristics and behaviors. Self-report measures can be particularly useful for assessing how individuals characteristically think about and engage in creative activity (Silvia et al., 2012).

One such measure is the Scale of Creative Attributes and Behavior (SCAB; Kelly, 2004), a 20-item self-report measure developed largely from characteristics of creative individuals identified in the creativity literature. The SCAB includes five dimensions: Creative Engagement, Creative Cognitive Style, Spontaneity, Tolerance, and Fantasy. These dimensions represent involvement and enjoyment in creative activities, integrative and divergent thinking, spontaneity and risk taking, openness to ideas and experiences, and imaginative mental activity, respectively. Subsequent research has provided evidence of construct and criterion validity. SCAB scores have been associated with openness to experience and artistic vocational interests (Kelly, 2006; Kelly & Kneipp, 2009), preference for creative academic environments (Kelly & Daughtry, 2008), creative activity among working writers (Kelly, 2016), hope, and adaptive stress responses (Kelly, 2025).



More recent examination of the SCAB has suggested a broader organization underlying its five dimensions. Kelly (2021) replicated the five-factor structure and identified two higher-order dimensions. Creative Engagement and Creative Cognitive Style formed a Cognitive-Productive dimension, whereas Spontaneity, Tolerance, and Fantasy formed an Expressive-Experiential dimension. The Cognitive-Productive dimension appears to reflect active involvement in creating together with cognitive tendencies associated with recognizing connections, possibilities, and solutions. Consistent with the relevance of these dimensions to creative activity, professional writers have scored higher than college students on both Creative Engagement and Creative Cognitive Style, as well as Fantasy (Kelly, 2016).

Recent psychometric research has continued to examine whether established creativity measures can be made more efficient while preserving meaningful construct representation. Rodriguez et al. (2023), for example, applied item response theory to the Creative Behavior Inventory and identified potentially redundant item clusters, illustrating the value of reconsidering established creativity measures at the item level. Similarly, Shaw et al. (2021) used item response theory to examine the measurement properties of a brief creative self-efficacy measure. More generally, development of abbreviated measures requires attention not only to reliability or item-total relationships, but also to construct coverage, factor structure, and correspondence with the parent measure (Clark & Watson, 2019; Smith et al., 2000).

The purpose of the present study was to develop and evaluate an abbreviated form of the SCAB by identifying a smaller set of items that represented the common variance of the original measure while retaining conceptual coherence. Item selection considered factor loadings, item relationships, redundancy, and item content. The resulting item set was then evaluated for internal consistency, factor structure, and correspondence with the SCAB-20. Given previous evidence for a higher-order Cognitive-Productive dimension composed of Creative Engagement and Creative Cognitive Style (Kelly, 2021), the study also examined whether the structure of the abbreviated measure was consistent with an overall score, distinguishable facets, or both.

2. Methods

2.1 Participants and Procedure

Participants included a convenience sample of 515 (418 women, 95 men, 2 did not identify) volunteers recruited from various undergraduate psychology courses at a small university in the southern United States. The average age of the sample was 26.77 years ($SD = 8.41$), $Mdn = 24.00$.

Participants provided informed consent prior to completing anonymous questionnaires that were administered as part of larger studies of personality. Participants completed questionnaires in small group settings. Other than being at least 18 years of age, no exclusionary criteria were used. Nominal extra credit was offered in exchange for participation.

2.2 Measures

2.2.1 Scale of Creative Attributes and Behavior

The Scale of Creative Attributes and Behavior (SCAB; Kelly, 2004) is a 20-item self-report measure of creative attributes and behaviors. It includes five previously identified dimensions: Creative Engagement, Creative Cognitive Style, Spontaneity, Tolerance, and Fantasy. Participants responded to items using a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree), with higher total scores indicating greater self-reported creativity. Standard instructions for the SCAB were provided to respondents: "There are many different ways to be creative. In responding to the following questions, think of all the new things and ideas that you generate, as well as all the ways you express yourself artistically as creativity. These ideas and expressions may include art, writing, new ideas, new uses for something, etc. Don't spend too much time on any one statement. Using the scale below, indicate how characteristic of you is each statement."

One-month test-retest reliability of .80 was reported for the original scale (Kelly, 2004), and previous studies have provided evidence of factorial, convergent, and criterion validity (Kelly, 2004, 2006, 2016). For the present study, the original scale is referred to as the SCAB-20 to distinguish it from the abbreviated measure.

2.3 Statistical Analyses

Scale reduction and evaluation were conducted in several stages. First, descriptive statistics and internal consistency of the SCAB-20 were examined. Principal axis factoring (PAF) was then conducted on the 20 items with extraction constrained to a single factor. The purpose of this initial analysis was item reduction rather than determination of the final factor structure. Items with loadings of approximately .50 or greater on the common

factor were considered candidates for the abbreviated measure (Clark & Watson, 2019; Hair et al., 2019). Corrected item-total correlations, inter-item correlations, and item content were subsequently examined to identify weak or potentially redundant items.

The factor structure of the retained items was then evaluated independently of the initial item-selection procedure. Both a constrained one-factor PAF and an unrestricted PAF with direct oblimin rotation were examined. An oblique rotation was selected because dimensions of creative behavior and cognition were expected to be related. Internal consistency of the final abbreviated measure was estimated using coefficient alpha and McDonald's omega. Coefficients of at least .70 were considered adequate (Morera & Stokes, 2016). Finally, the abbreviated scale was correlated with the SCAB-20 to evaluate its correspondence with the original measure. Pearson correlations between the retained factors were also examined to assess their degree of overlap.

3. Results

3.1 Initial Item Reduction

The mean SCAB-20 total score was 95.89 (SD = 14.96), with coefficient alpha of .833. Sampling adequacy for factor analysis was supported by a Kaiser-Meyer-Olkin value of .833 and a significant Bartlett's test of sphericity, $\chi^2(190) = 3966.14, p < .001$.

Table 1: Principal Axis Factor Loadings of the 20 SCAB Items on a Single Common Factor

Item	Dimension	FL
1. I spend much of my time creating things	Engagement	.51
2. I dabble in many different hobbies	Engagement	.49
3. I enjoy creating new things	Engagement	.59
4. I work on some type of creative project on a daily basis	Engagement	.49
5. I am often able to see the "big picture" where others can't	Cognitive Style	.64
6. I am often able to make connections between seemingly unrelated things or situations	Cognitive Style	.64
7. I have an ability to find the hidden potential of ideas that others often can't see	Cognitive Style	.62
8. When someone asks me to solve a difficult problem, I can usually find creative solutions	Cognitive Style	.60
9. I am somewhat mischievous	Spontaneity	.41
10. I am very spontaneous	Spontaneity	.50
11. I am impulsive	Spontaneity	.45
12. I am a "risk taker"	Spontaneity	.42
13. I am flexible in my thinking	Tolerance	.54
14. I like new ideas	Tolerance	.59
15. I am very tolerant of other people	Tolerance	.23
16. I am accepting of other peoples' ideas	Tolerance	.30
17. I often fantasize	Fantasy	.42
18. I don't like to waste my time daydreaming*	Fantasy	.13
19. I would have difficulty just letting my mind wander without control or guidance*	Fantasy	.15
20. I like to imagine going to new places	Fantasy	.33

Note: Extraction method = principal axis factoring with one factor specified. *Reverse-scored item. SCAB = Scale of Creative Attributes and Behavior. FL = factor loading. Dimension indicates original factor assignment (Kelly, 2004).

PAF of the 20 SCAB items constrained to a single factor yielded an eigenvalue of 4.54 and accounted for 22.7% of the variance. As shown in Table 1, nine items loaded at or above .50 and were initially considered for the abbreviated measure. These items were drawn primarily from the Creative Engagement and Creative

Cognitive Style dimensions, with three additional items representing Spontaneity (Item 10) and Tolerance (Items 13 and 14).

The nine candidate items were subsequently examined for inter-item relationships, item-total correlations, redundancy, and conceptual fit. Item 10 (“I am very spontaneous”) showed comparatively weak relationships with the other candidate items, including two inter-item correlations below .12, suggesting limited coherence with the emerging item set. Item 14 (“I like new ideas”) was judged to be relatively nonspecific as an indicator of creativity. Both items were therefore removed from further consideration. Item 13 (“I am flexible in my thinking”) was retained provisionally because of its conceptual relevance to creative cognition.

The resulting seven-item set was then subjected to further factor analysis. Item 13 emerged as a consistently weak indicator: in a one-factor solution, its loading was .38 and its communality was .15; in an unrestricted two-factor solution, its primary pattern loading was .38 with a communality of .15. Because Item 13 was poorly represented by either solution, it was removed. The resulting six items, Items 1, 3, 5, 6, 7, and 8, were retained for further analysis and named the SCAB-6.

3.2 Internal Consistency of the SCAB-6

The SCAB-6 demonstrated good internal consistency, $\alpha = .827$ and $\omega = .819$. Corrected item-total correlations ranged from .48 to .71. Deletion of no item meaningfully improved internal consistency; although deletion of Item 1 increased alpha from .827 to .830, this difference was negligible and the item was retained to preserve representation of Creative Engagement.

3.3 One-Factor Structure

To determine the degree to which the six retained items represented a common dimension, a PAF constrained to one factor was conducted. The first initial eigenvalue was 3.32, accounting for 55.3% of the total variance. The extracted sums of squared loadings factor accounted for 47.3% of the variance. All six items loaded positively on the common factor, with loadings ranging from .48 to .84. The two Creative Engagement items loaded .48 and .53, whereas the four Creative Cognitive Style items loaded from .69 to .84. Communalities ranged from .23 to .70.

These findings indicated substantial common variance among the six items and supported the potential use of an overall SCAB-6 score. However, the presence of a second initial eigenvalue greater than 1.0 (1.16) suggested that the structure warranted additional examination.

3.4 Two-Factor Structure

An unrestricted PAF with direct oblimin rotation extracted two factors, together accounting for 62.4% of the extracted variance. The rotated solution was clear and corresponded closely to two dimensions of the original SCAB. Table 2 presents the final SCAB-6 items and rotated factor loadings.

Table 2: Item Statistics and Factor Loadings for the SCAB-6

SCAB-6 Item	CS	Engage	h ²
1. I spend much of my time creating things	-.02	.79	.61
2. I enjoy creating new things	.03	.79	.66
3. I am often able to see the “big picture” where others can’t	.80	-.03	.62
4. I am often able to make connections between seemingly unrelated things or situations	.84	-.06	.66
5. I have an ability to find the hidden potential of ideas that others often can’t see	.86	.00	.74
6. When someone asks me to solve a difficult problem, I can usually find creative solutions	.59	.15	.45

Note. Extraction method = principal axis factoring. Rotation = direct oblimin with Kaiser normalization. h^2 = communality; CS = Cognitive Style; Engage = Engagement; SCAB-6 = Scale of Creative Attributes and Behavior-6.

Factor 1 consisted of the four Creative Cognitive Style items. Factor 2 consisted of the two Creative Engagement items. Secondary pattern coefficients were small, ranging in absolute magnitude from .00 to .15, indicating little unique cross-loading between the two factors. Communalities ranged from .45 to .74. The two

factors were moderately correlated, $r = .50$, indicating meaningful shared variance while supporting their distinction as related facets of the broader construct.

3.5 Relations Among SCAB Scores

The SCAB-6 total score was strongly correlated with the SCAB-20 total score, $r = .79$, $p < .001$, indicating substantial correspondence between the abbreviated and original measures. The two SCAB-6 facets, Creative Cognitive Style and Creative Engagement, were moderately correlated, $r = .42$, $p < .001$.

The SCAB-6 total correlated .91 with Creative Cognitive Style and .76 with Creative Engagement ($ps < .001$). Because the facet items are included in calculation of the total score, however, these part-whole correlations are presented descriptively rather than as evidence of construct validity.

4. Discussion

The present study developed a six-item abbreviated version of the SCAB with good internal consistency and substantial correspondence with the SCAB-20. Although all six items loaded meaningfully on a common factor, unrestricted factor analysis produced a clear two-factor solution consisting of the originally identified dimensions of Creative Cognitive Style and Creative Engagement (Kelly, 2004). Thus, the SCAB-6 appears to assess a focused Cognitive-Productive aspect of one's creativity rather than reproduce the full multidimensional content of the SCAB-20.

This structure is consistent with previous SCAB research. Kelly (2021) found that Creative Cognitive Style and Creative Engagement formed a higher-order Cognitive-Productive dimension, distinct from an Expressive-Experiential dimension consisting of Spontaneity, Tolerance, and Fantasy. The present item-reduction procedure independently converged on these same two dimensions, with all six retained items originating from Creative Cognitive Style or Creative Engagement. Previous criterion evidence also supports their relevance: professional writers scored higher than college students on both dimensions (Kelly, 2016). Writers also scored higher on Fantasy, however, suggesting that characteristics omitted from the SCAB-6 may remain important to particular forms of creativity.

The findings also clarify how the SCAB-6 may be used. The one-factor solution showed meaningful loadings for all six items, and the total scale demonstrated good internal consistency, supporting use of an overall score when a brief measure of a Cognitive-Productive orientation is desired. At the same time, Creative Cognitive Style and Creative Engagement formed clearly differentiated factors and were only moderately related. Researchers with hypotheses concerning these distinct aspects of creativity might therefore examine the four Cognitive Style items and two Engagement items separately. Because Engagement contains only two items, however, it is perhaps best considered a brief facet rather than an independent subscale. Researchers interested in the broader creative characteristics of Spontaneity, Tolerance, and Fantasy should continue to consider the SCAB-20.

Several limitations warrant consideration. The SCAB-6 was developed and evaluated in the same sample, which consisted predominantly of female college students from a small university. Its association with the SCAB-20 is also partly attributable to shared items and should not be regarded as independent validation. Replication in independent and more diverse samples is therefore needed to confirm the two-facet structure and examine relationships with external indicators of creativity. Future research should also evaluate the stability and usefulness of the two-item Engagement facet.

In conclusion, the SCAB-6 provides an efficient assessment of the Cognitive-Productive dimension of creativity represented by Creative Cognitive Style and Creative Engagement. It offers a brief overall score when measurement efficiency is important while retaining two theoretically meaningful facets that can be examined when relevant to the research question. The SCAB-6 should therefore be viewed as a focused alternative rather than a replacement for the broader SCAB-20.

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